

Remarks

The Examiner has rejected Claim 1 as anticipated by Williams, et al., U.S. Patent No. 2,893,490 or Rial, U.S. Patent No. 2,525,314.

The Examiner has rejected Claim 2 under 35 USC 103(a) as being unpatentable over Williams in view of Rial and Spitz (2,808,110).

Rejection

35 U.S.C. § 102

The examiner has rejected claim 1 as anticipated by Williams et al. US Patent No. 2,893,490 or Rial US Patent No. 2,525,314.

Claim 1 has been amended to clarify what the applicant regards as his invention. Additional limitations have been added to address features of the invention that are not found in the Williams patent or the Rial patent. The Williams patent does not disclose heating elements in contact with the production fluid. The heating elements of Williams are wound around the outside of a production line and therefore, heat has to transfer through the diameter of the pipe in order to contact the production fluid. With significant flow volumes and temperature differentials, the heat produced by the device in Williams is not effectively transferred to the production fluid and the device of Williams has not met with commercial success. The device of the present invention allows for contact between the production fluid and the heating element. In particular, the presence of a perforated inner hollow core inside an outer case housing the

heating apparatus allows for the interchange of fluid from the inner hollow core to the outer case housing a heating element.

The device of the Rial patent provides heating elements in line with the production tubing and in the presence of suction rods. The device of Rial does not provide a perforated inner hollow core and an outer case. The device of the present invention provides a perforated hollow core that provides for the flow of production fluids and an outer case that houses the heating element. The device of the present application solves the problem with the Rial device that the suction rods mechanically reciprocate within the encapsulating tubing and damage the heating elements. The present application provides for heating elements spaced away from the center of the production tubing. The present application provides for contact of the production fluids with the heating elements by providing a novel perforated inner tubing section. This perforated section is not found in either Williams or Rial.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

As discussed above, the cited references do not set forth each and every element as claimed in the present application as amended. Therefore, withdrawal of the rejections is respectfully requested.

35 U.S.C. § 103

The examiner has rejected Claim 2 under 35 USC 103a as being unpatentable over Williams in view of Rial and Spitz (2,808,110). The perforations of Spitz are utilized in a pump submerged in a well (Col 2, lines 34-37). The perforations of Spitz are used to protect a pump. The heating device of Spitz is designed to heat the contents of a well. The device of Spitz is not designed to be placed in production tubing and eliminate the formation of paraffin at cold zones, but rather anticipates that heating the entire volume of the well would prevent the formation of paraffin in the production tubing. This approach does not work as cold zones above the production zone can be up to thousands of feet away and the heating effect of a heater submerged in a well does not keep the production fluid warm on its entire path to the surface. Rial discloses heating elements within an enlarged chambered casing.

The perforations of the present invention are present to allow the flow of production fluid or crude oil from the inner core to the outer shell and allow the production fluid or crude oil to contact a heating apparatus. This is not the device disclosed in the Spitz patent. The Spitz patent discloses a device with heating element 24 that is wrapped around the exterior of production tubing 12. The heating element exterior to the production tubing is the same solution to paraffin formation proposed in Williams, and is not effective. Spitz does not teach or suggest a heating element in a production tubing or line. Spitz does not teach or suggest a heating element placed outside a hollow core alongside a perforated

section of tubing that allows production fluid to flow both in and out of the hollow core to be heated.

Further, Rial suggests that the heating element be insulated and not contact the fluid directly. Rial Col. 2, lines 16- 19 states "this resistance wire is insulated from its enclosing metallic tubing usually insulated by a compound in the tubing." The combination of Rial and Spitz would yield a pump submerged in a well with a protective shield around the pump and enlarged chamber in the production line where insulated heating elements are contained centrally axially in the production line. The combination of Spitz and Rial would not result in the device of the present application where a hollow perforated core is surrounded by an outer case and forms a chamber housing a heating element where production fluid can pass from a perforated inner hollow core to an outer case and contact a heating element.

In order to establish a *prima facie* case of obviousness under 35 U.S.C. §103, the Examiner must demonstrate that there is a suggestion or motivation, either in the references themselves, or in the knowledge generally available to one of ordinary skill in the art, to modify the references or combine the reference teachings. Furthermore, the prior art references must teach or suggest all of the claim features when combined. It is well settled law that the prior art itself must provide the motivation for a proposed alteration of a reference. Ex parte Chicago Rawhide Manufacturing Co., 220 U.S.P.Q. 351, (B.O.P.A. 1984). Moreover, the suggestion must be plain and clear or the rejection is untenable. Fromson v. Offset Plate, Inc., 225 U.S.P.Q. 26, 32 (Fed. Cir. 1985); Kimberly-Clark Corp. v. Johnson

& Johnson, 223 U.S.P.Q. 603, 610 (Fed. Cir. 1984). The Examiner is not free to pick bits and pieces from the prior art and, with the hindsight benefit of applicants' disclosure, attempt to reconstruct the invention. Orthopedic Equipment, Inc. v. U.S., 217 U.S.P.Q. 193, 199 (Fed. Cir. 1983).

As stated above, the cited references either individually or in combination, do not teach or suggest all of the elements of Claim 2 of the present application. Further, there is no motivation disclosed in the references to combine the disparate elements. In light of the longstanding need in the industry, it is evident that the combination of elements in the present application was not obvious.

New Claims 3-7

New Claims 3-7 recite features not disclosed or suggested in the prior art and applicant submits new Claims 3-7 are patentable.

Conclusion

In view of the foregoing remarks, it is believed that this Application is now in condition for allowance. Early and favorable reconsideration is respectfully solicited.

If the Examiner has any questions regarding the foregoing amendment and remarks, or if prosecution of this Application could be furthered by a telephone interview, the Examiner is requested to telephone the Applicants' undersigned attorney.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'S. J. Fields', written over a horizontal line.

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